



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/765,861

01/29/2004

Yoichi Ohmura

402955

2617

23548

7590

03/03/2005

LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

EXAMINER

SOHN, SEUNG C

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/765,861	Applicant(s) OHMURA ET AL.	
	Examiner Seung C. Sohn	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,8 and 9 is/are rejected.
- 7) ☒ Claim(s) 2-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0104</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. **Claim 3** is objected to because of the following informalities:

On claim 3, last line, "the emission light distribution pattern" lacks an antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. ***Claims 1 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ieki (Patent No. US 5,750,984).***

Regarding claim 1, Ieki shows in Figs. 1 & 3 the following elements of

Applicant's claim:

a) a scale (Fig. 3, 1) that generates a periodical light-intensity distribution pattern having a predetermined pitch P with irradiation of emission light from a light source (Col. 3, lines 25-29); and

b) a plurality of light-receiving segment groups (a, a/, b, b/) that are shifted relative to said scale to generate phase signals having predetermined phase differences so that the movement amount is detected based on the phase signals with the predetermined phase differences (Col. 3, lines 33-37),

wherein a plurality of light receiving segments (Fig. 1, a, a/, b or b/) are positioned to have the same phase to form each of said plurality of light-receiving segment groups, which includes at least two of said plurality of light receiving segments adjacent to each other.

Regarding claim 8, leki discloses that the number of said light-receiving segment groups are four that respectively correspond to generate four phase signals, and when using one of the four phases as a reference phase, the phases of the other three signals are set to 90.degree. 180.degree. and 270.degree. (Col. 3, lines 35-37).

Regarding claim 9, leki discloses that a width of each light-receiving segment is set to approximately 1/2 of the predetermined pitch P (Col. 3, lines 38-40).

5. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by leki (Patent No. US 5,981,942).

Regarding claim 1, leki shows in Figs. 3 & 7 the following elements of Applicant's claim:

a) a scale (Fig. 3, 1) that generates a periodical light-intensity distribution pattern having a predetermined pitch P with irradiation of emission light from a light source (Col. 4, lines 3-5); and

b) a plurality of light-receiving segment groups (a, a/, b, b/) that are shifted relative to said scale to generate phase signals having predetermined phase differences so that the movement amount is detected based on the phase signals with the predetermined phase differences (Col. 4, lines 6-17),

wherein a plurality of light receiving segments (b) are positioned to have the same phase to form each of said plurality of light-receiving segment groups, which includes at least two (Fig. 7A, 32b & 34b) of said plurality of light receiving segments adjacent to each other.

Regarding claim 8, Ieki discloses that the number of said light-receiving segment groups are four that respectively correspond to generate four phase signals, and when using one of the four phases as a reference phase, the phases of the other three signals are set to 90.degree. 180.degree. and 270.degree. (Col. 4, lines 15-18).

6. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki (Patent Pub. No. US 2002/0018220 A1 published on Feb. 14, 2002).

Regarding claim 1, Aoki shows in Figs. 1-4 the following elements of Applicant's claim:

a) a scale (Fig. 1, 1) that generates a periodical light-intensity distribution pattern having a predetermined pitch P with irradiation of emission light from a light source (4) (Page 2, Paragraph 0036); and

b) a plurality of light-receiving segment groups (Fig. 4, A, B, AB, BB) that are shifted relative to said scale to generate phase signals having predetermined phase differences so that the movement amount is detected based on the phase signals with the predetermined phase differences (Page 2, Paragraph 0037),

wherein a plurality of light receiving segments (Fig. 4, A, B, AB or BB) are positioned to have the same phase to form each of said plurality of light-receiving segment groups, which includes at least two (e.g., Fig. 4, A in PDAX and A in PDAY) of said plurality of light receiving segments adjacent to each other.

Regarding claim 8, Aoki discloses that the number of said light-receiving segment groups are four that respectively correspond to generate four phase signals, and when using one of the four phases as a reference phase, the phases of the other three signals are set to 90.degree. 180.degree. and 270.degree. (Page 2, Paragraph 0037).

Allowable Subject Matter

7. **Claims 2-7** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a photoelectric encoder comprising, in addition to the other recited features of the claim, "area centers of gravity on a phase axis of said plurality of the light-receiving segment groups having a predetermined relationship in phase difference to each other are made coincident with each other".

Claim 3 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a photoelectric encoder comprising, in addition to the other recited features of the claim, "area centers of gravity on a phase axis of said plurality of the light-receiving segment groups having a predetermined relationship in phase difference to each other are arranged symmetrically in position with respect to a center axis of the emission light distribution pattern".

Claim 4 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a photoelectric encoder comprising, in addition to the other recited features of the claim, "a center distance between the center positions of the adjacent light-receiving segments located at the respective ends of different light-emitting segment groups having different phases is equal to $5P/4$ ".

Claims 5-7 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, a photoelectric encoder comprising, in addition to the other recited features of the claim, "a cross-talk preventive portion is integrally formed in the spaces between the respective adjacent light-receiving segments".

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Omi (Patent No. US 6,410,911) discloses an optical displacement detecting apparatus.

Holzapfel et al. (Patent No. US 6,794,637) discloses an optical device for measuring position.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seung C. Sohn whose telephone number is (571) 272-2446. The examiner can normally be reached on Monday through Friday from 8:30 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seung C. Sohn
Examiner
Art Unit 2878

